

CLAIMS

We claim:

1. A method for scheduling, comprising:
negotiating a reservation to perform an order for a customer against a schedule;
booking the order having a priority, which was negotiated, against the schedule;
assigning the order to a shift of a mobile service representative; and
optimizing periodically the shift of the mobile service representative.
2. The method of claim 1, further comprising configuring a constraint set, wherein the act of configuring allows a user to modify the constraint set so as to control the way in which orders are assigned to a mobile service representative.
3. The method of claim 1, wherein negotiating includes using a window over the schedule, wherein the window defines a set of shifts in the schedule that can be booked by the act of booking.
4. The method of claim 1, wherein negotiating includes negotiating an appointment window for the order so as to allow the mobile service representative to begin the performance of the order within the time frame of the appointment window.
5. The method of claim 1, further comprising bumping an order, which has a lower priority, for another order, which has a higher priority.
6. The method of claim 1, further comprising escalating the priority of an order over time when the order has not been performed by the mobile service representative.
7. The method of claim 1, further comprising splitting an order to a set of orders when the performance of the order requires a number of days to perform the order.

8. The method of claim 1, wherein optimizing includes optimizing a single shift of a mobile service representative so as to shorten travel time between orders booked in the single shift.

9. The method of claim 1, wherein optimizing includes optimizing at least one pair of shifts, wherein optimizing is selected from a group consisting of swapping orders between the at least one pair of shifts and reassigning orders between the at least one pair of shifts.

10. The method of claim 1, wherein assigning includes assigning the order to a shift of the mobile service representative if the mobile service representative has the set of skills and the set of equipment.

11. A computer readable medium having instructions stored thereon for causing a computer to perform a method for scheduling, the method comprising:
 negotiating a reservation to perform an order for a customer against a schedule;
 booking the order having a priority, which was negotiated, against the schedule;
 assigning the order to a shift of the mobile service representative; and
 optimizing periodically the shift of the mobile service representative.

12. The method of claim 11, further comprising configuring a constraint set, wherein the act of configuring allows a user to modify the constraint set so as to control the way in which orders are assigned to a mobile service representative.

13. The method of claim 11, wherein negotiating includes using a window over the schedule, wherein the window defines a set of shifts in the schedule that can be booked by the act of booking.

14. The method of claim 11, wherein negotiating includes negotiating an appointment window for the order so as to allow the mobile service representative to begin the performance of the order within the time frame of the appointment window.

15. The method of claim 11, further comprising bumping an order, which has a lower priority, for another order, which has a higher priority.

16. The method of claim 1, further comprising escalating the priority of an order over time when the order has not been performed by the mobile service representative.

17. The method of claim 11, further comprising splitting an order to a set of orders when the performance of the order requires a number of days to perform the order.

18. The method of claim 11, wherein optimizing includes optimizing a single shift of a mobile service representative so as to shorten travel time between orders booked in the single shift.

19. The method of claim 11, wherein optimizing includes optimizing at least one pair of shifts, wherein optimizing is selected from a group consisting of swapping orders between the at least one pair of shifts and reassigning orders between the at least one pair of shifts.

20. The method of claim 11, wherein assigning includes assigning the order to a shift of the mobile service representative if the mobile service representative has the set of skills and the set of equipment.

21. A scheduling system for a dispatching environment, comprising:
a negotiator to negotiate an appointment window to perform an order;
an assigner to assign the order to a shift of a mobile service representative; and

an optimizer to optimize dynamically at least one shift so as to enhance the scheduling system in accordance with a predetermined set of business objectives.

22. The scheduling system of claim 21, wherein the order is defined by a data structure that includes an appointment window, a duration, a priority, a location, and a set of skills required to carry out the order, and wherein the data structure resides on a computer media.

23. The scheduling system of claim 21, wherein the mobile service representative is defined by a data structure that includes a set of skills that the mobile service representative possesses and the equipment that the mobile service representative possesses, and wherein the data structure resides on a computer media.

24. The scheduling system of claim 21, wherein the shift is defined by a data structure that includes a shift start date and start time, a shift end date and end time, a set of break start dates and start time, a set of break end dates and end times, and a starting location and an ending location, and wherein the data structure resides on a computer media.

25. The scheduling system of claim 21, wherein the assigner accounts for the travel time of the mobile service representative and the break time of the mobile service representative in assigning the order to the shift of the mobile service representative.

26. The scheduling system of claim 21, wherein the appointment window includes an identifier, a start time, and an end time, and wherein the appointment window is visible to the negotiator.

27. The scheduling system of claim 21, wherein the order includes a predetermined level of priority, wherein the predetermined level of priority of the order determines whether the order will be bumped by another order having a higher level of priority.

28. The scheduling system of claim 21, wherein the order includes several orders that have been aggregated.

29. The scheduling system of claim 21, wherein the assigner includes an assignment filter that finds a set of mobile service representatives that is suitable to perform the order, wherein the assignment filters returns the shift of each mobile service representatives in the set of mobile service representatives.

30. The scheduling system of claim 21, wherein the assigner includes an assignment error component that returns a set of reasons when an order cannot be assigned to a mobile service representative.

31. The scheduling system of claim 21, further comprising a travel time component that calculates the travel time between the start of a shift to the first order assigned to the shift and the travel time between two orders, and the travel time between the last order assigned to the shift and the end of the shift.

32. The scheduling system of claim 21, wherein the optimizer includes an optimizing filter, wherein the optimizing filter finds a shift that can be reassigned to another shift.

33. The scheduling system of claim 21, wherein the optimizer includes an optimization objective component having a set of optimization objectives, wherein the optimization objective component determines the degree to which the set of optimization objectives are satisfied if the optimizer were to optimize a shift or a pair of shifts.

34. A method for scheduling mobile service representatives, comprising:
negotiating an appointment window for booking a reservation;
assigning the reservation to a shift of a mobile service representative; and

optimizing periodically the shift of the mobile service representative while the acts of negotiating and assigning are executing.

35. The method of claim 34, further comprising adding a mobile service representative, wherein adding the mobile service representative includes identifying a working area of the mobile service representative, a set of skills of the mobile service representative, and a set of equipment types that is possessed by the mobile service representative.

36. The method of claim 34, further comprising adding a shift, wherein adding a shift includes identifying a mobile service representative to be associated with the shift, a start time, an end time, and a set of breaks.

37. The method of claim 34, further comprising adding a reservation, wherein adding a reservation includes identifying a duration, a priority, a location, an appointment window, a mobile service representative, a bumping indicator, and an aggregation indicator.

38. The method of claim 34, further comprising finding a list of appointment windows for the act of negotiating.

39. The method of claim 34, further comprising assigning forcibly a reservation when the act of assigning the reservation has failed.

40. The method of claim 34, further comprising removing an assignment of a reservation.

41. The method of claim 34, further comprising canceling a reservation.

42. The method of claim 34, further comprising completing a reservation so as to inhibit the reservation from being bumped, aggregated, or moved to another shift.

43. The method of claim 34, further comprising reassigning a reservation.
44. The method of claim 34, further comprising reassigning forcibly a reservation.
45. The method of claim 34, further comprising assigning a bumped or a yanked reservation.
46. The method of claim 34, further comprising setting at least one property from a set of properties of a reservation.
47. The method of claim 34, further comprising modifying a mobile service representative.
48. The method of claim 34, further comprising deleting a mobile service representative.
49. The method of claim 34, further comprising modifying a shift.
50. The method of claim 34, further comprising modifying forcibly a shift.
51. The method of claim 34, further comprising deleting a shift.
52. The method of claim 34, further comprising deleting forcibly a shift.
53. The method of claim 34, further comprising notifying a subscriber when a reservation event occurs.

54. The method of claim 34, further comprising getting reservation assignment information.

55. The method of claim 34, further comprising getting shift assignment information.

56. The method of claim 34, further comprising getting mobile service representative assignment information.

57. The method of claim 34, further comprising confirming a reservation.

58. A computer readable medium having instructions stored thereon for causing a computer to perform a method for scheduling mobile service representatives, the method comprising:

negotiating an appointment window for booking a reservation;
assigning the reservation to a shift of a mobile service representative; and
optimizing periodically the shift of the mobile service representative while the acts of negotiating and assigning are executing.

59. The method of claim 58, further comprising adding a mobile service representative, wherein adding the mobile service representative includes identifying a working area of the mobile service representative, a set of skills of the mobile service representative, and a set of equipment types that is possessed by the mobile service representative.

60. The method of claim 58, further comprising adding a shift, wherein adding a shift includes identifying a mobile service representative to be associated with the shift, a start time, an end time, and a set of breaks.

61. The method of claim 58, further comprising adding a reservation, wherein adding a reservation includes identifying a duration, a priority, a location, an appointment window, a mobile service representative, a bumping indicator, and an aggregation indicator.

62. The method of claim 58, further comprising finding a list of appointment windows for the act of negotiating.

63. The method of claim 58, further comprising assigning forcibly a reservation when the act of assigning the reservation has failed.

64. The method of claim 58, further comprising removing an assignment of a reservation.

65. The method of claim 58, further comprising canceling a reservation.

66. The method of claim 58, further comprising completing a reservation so as to inhibit the reservation from being bumped, aggregated, or moved to another shift.

67. The method of claim 58, further comprising reassigning a reservation.

68. The method of claim 58, further comprising reassigning forcibly a reservation.

69. The method of claim 58, further comprising assigning a bumped or a yanked reservation.

70. The method of claim 58, further comprising setting at least one property from a set of properties of a reservation.

71. The method of claim 58, further comprising modifying a mobile service representative.
72. The method of claim 58, further comprising deleting a mobile service representative.
73. The method of claim 58, further comprising modifying a shift.
74. The method of claim 58, further comprising modifying forcibly a shift.
75. The method of claim 58, further comprising deleting a shift.
76. The method of claim 58, further comprising deleting forcibly a shift.
77. The method of claim 58, further comprising notifying a subscriber when a reservation event occurs.
78. The method of claim 58, further comprising getting reservation assignment information.
79. The method of claim 58, further comprising getting shift assignment information.
80. The method of claim 58, further comprising getting mobile service representative assignment information.
81. The method of claim 58, further comprising confirming a reservation.